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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/046,535	01/16/2002	Matthew B. Hoyt	1005-188	5664

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EXAMINER

JUSKA, CHERYL ANN

ART UNIT	PAPER NUMBER
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1771

DATE MAILED: 08/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/046,535	HOYT ET AL.	
	Examiner	Art Unit	
	Cheryl Juska	1771	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>0202</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 1 is rejected under 35 USC 102(b) as being anticipated by (a) JP 70-004434 assigned to Toyo, (b) JP 70-027053 assigned to Toray, (c) JP 03-193982 issued to Kato, (d) JP 04-034016 issued to Okamoto, (e) JP 04-050318 assigned to Kanebo, (f) JP 06-173165 assigned to Kawashima, and (g) JP 07-300724 issued to Kinoshita, each individually.

Claim 1 is drawn to a method of making a dyed sheath/core filament comprising the steps of (a) forming a sheath/core filament wherein said core is a polymer which is susceptible to dyeing by a dye in a dyebath and said sheath is a polymer which is resistant to dyeing by said dye, (b) bringing said filament into contact with the dyebath, and (c) allowing the dye to physically diffuse or penetrate through the sheath to dye the core while the sheath remains substantially undyed.

Each of the cited references teach a sheath/core filament wherein the sheath and core polymers have different affinities for a particular dyebath chemical, so that when the core is dyed while the sheath remains substantially undyed. See abstract of each reference. Thus, claim 1 is rejected as being anticipated.

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3. Claims 1, 3, and 4 are rejected under 35 USC 102(b) as being anticipated by (a) JP 61-266617 assigned to Toray and (b) JP 62-184185 assigned to Toray, each individually.

Claim 1 has been previously described. Claim 3 limits the sheath to being less than about 10 wt. %. Claim 4 limits the filament to being 90-97 wt. % core polymer and about 3-10 wt. % sheath polymer.

The cited references both teach a sheath/core filament wherein the sheath and core polymers have different affinities for a particular dyebath chemical, so that the core is dyed while the sheath remains substantially undyed. Additionally, both references teach the sheath comprises 5-30% of the fiber. Thus, claims 1, 3, and 4 are anticipated by the cited references.

4. Claims 1 and 8 are rejected under 35 USC 102(b) as being anticipated by US 4,069,363 issued to Segraves et al.

Claim 8 limits core polymer to nylon 6, nylon 12, nylon 11, nylon 6,6, nylon 8,10, or copolymers or blends thereof.

Segraves discloses a nylon bicomponent fiber comprising a sheath of nylon homopolymer and a core of a copolymer hexamethylene dodecanedioamide (nylon 6,12) and epsilon-caproamide (nylon 6) (abstract and col. 1, lines 57-63). The sheath homopolymer may be nylon 6,12, nylon 6,6, or nylon 6 (col. 3, line 67-col. 4, line 4). Upon dyeing the sheath/core fiber, the dye is predominantly taken up by the core polymer, leaving the nylon homopolymer sheath light in color (col. 4, lines 16-24). Thus, claims 1 and 8 are anticipated by Segraves.

5. Claims 1, 2, 8, and 9 are rejected under 35 USC 102(b) as being anticipated by US 4,075,378 issued to Anton et al.

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Claims 1 and 8 have been previously described. Claim 2 limits the filament to being a trilobal filament. Claim 9 limits the core nylon polymer to having an AEG of 10-100 meq/kg.

Anton discloses a sheath/core polyamide fiber comprising an acid-dyeable nylon core surrounded by a basic-dyeable nylon sheath (abstract). The sheath nylon has aromatic sulfonate groups blocking the amine end groups (abstract). Thus, the fiber is able to be cross-dyed with different acid and basic dyes to produce varying color effects. Anton teaches a variety of shades are obtained in the acid-dyeable nylon by varying the AEG concentration (col. 2, lines 13-20). The sheath/core ratio ranges from 40/60 to 60/40 (col. 2, line 65-col. 3, line 1). In order to be sufficiently acid-dyeable, the core nylon should have an amine end group concentration of 40-100 meq/kg of polymer (col. 2, lines 27-41). The basic-dyeable sheath has about 15-40 meq/kg of polymer, but is not acid-dyeable (col. 2, lines 42-47). The filaments may have a round cross-section or may be trilobal (col. 3, lines 51-54). Thus, Anton anticipates claims 1, 2, 8, and 9.

Claim Rejections - 35 USC § 102/103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 9 is rejected under 35 USC 102(b) as being anticipated by, or in the alternative, under 35 USC 103(a) as being obvious over the cited Segraves patent.

Although Segraves does not explicitly teach the claimed AEG concentration of the core nylon, it is asserted that said core polymer inherently possess said concentration. Support for

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said assertion is found in the fact that the core is easily dyeable meaning the amine end groups are available as dyesites (i.e., a high AEG concentration), while the sheath is substantially undyed due to its dyesites being blocked (i.e., a low AEG concentration). If the Segraves polymer does not inherently meet the claimed AEG concentration, it would have been obvious to one skilled in the art to modify the number of available amine end group dyesites in order to increase or decrease the dyeability of the polymer. Thus, claim 9 is rejected as being anticipated by or obvious over the cited prior art.

Claim Rejections - 35 USC § 103

8. Claim 3-7 are rejected under 35 USC 103(a) as being unpatentable over Segraves in view of Lin.

Claim 3-7 are rejected under 35 USC 103(a) as being unpatentable over Anton in view of Lin.

Claims 3 and 4 have been previously described. Claim 5 limits the core polymer to being nylon having an amine end group concentration (AEG) of 10-100 meq/kg and the sheath polymer to being a nylon having an AEG of less than about 10 meq/kg. Claim 6 limits the AEG of the nylon sheath to being less than about 5 meq/kg. Claim 7 limits the nylon sheath polymer to being a nylon 6,12 homopolymer.

Neither Segraves nor Anton explicitly teach a sheath/core ratio range of 3/97 wt. % to 10/90 wt. %. However, the claimed range is well-known in the art. For example, the Lin patent is directed to sheath-core polyamide filaments useful in carpet constructions that are resistant to staining by coffee and acid dyes common in beverages. The sheath component is comprised of

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nylon 6,12, nylon 12, nylon 6,10, or nylon 11 and the core may be nylon 6,6, nylon 6, or copolymers thereof. (Title; Abstract; and col. 1, lines 5-11 and 42-64). The weight ratio of the sheath component to the core component is in the range of 10:90 to 80:20 (col. 1, lines 35-42). Hence, it would have been obvious to one of ordinary skill in the art to employ the claim sheath/core ratio as taught by Lin in either the Segraves or Anton inventions in order to reduce the amount of sheath polymer employed.

With respect to the AEG concentrations of claims 5 and 6, it is reiterated that Anton teaches the core nylon has an AEG concentration of 40-100 meq/kg and the sheath has said concentration of 15-40 meq/kg. Thus, Anton teaches the core AEG concentration, while it would have been obvious to modify the sheath AEG concentration to the claimed less than 10 or less than 5 in order to decrease the dyeability of the sheath polymer.

Similarly, with respect to claims 5 and 6, it is asserted that the sheath/core polymers of Segraves inherently possess said concentrations. Support for said assertion is found in the fact that the core is easily dyeable meaning the amine end groups are available as dyesites, while the sheath is substantially undyed due to its dyesites being blocked (i.e., a low AEG concentration). If the Segraves polymer does not inherently meet the claimed AEG concentrations, it would have been obvious to one skilled in the art to modify the number of available amine end group dyesites in order to increase or decrease the dyeability of the polymer.

Thus, claims 3-7 are rejected as being obvious over the Segraves or Anton patents in view of Lin.

9. Claims 1 and 3-9 are rejected under 35 USC 103(a) as being obvious over US 5,447,794 issued to Lin in view of US 5,340,886 issued to Hoyt et al. and in further view of Segraves.

The Lin patent is directed to sheath-core polyamide filaments useful in carpet constructions that are resistant to staining by coffee and acid dyes common in beverages. The sheath component is comprised of nylon 6,12, nylon 12, nylon 6,10, or nylon 11 and the core may be nylon 6,6, nylon 6, or copolymers thereof. (Title; Abstract; and col. 1, lines 5-11 and 42-64). The weight ratio of the sheath component to the core component is in the range of 10:90 to 80:20 (col. 1, lines 35-42). Additionally, Lin teaches one embodiment comprising a nylon 6,12 sheath and a nylon 6,6 core, wherein the nylon 6,6 core polymer has an AEG concentration of about 50 meq/kg (col. 5, lines 5-17).

Thus, Lin teaches the limitations of applicant's claims 1, 3, 4, and 7-9 with the exception that the sheath/core filament is dyed so that the sheath remains substantially undyed. Additionally, Lin fails to teach AEG concentration of sheath polymer, as recited in claims 5 and 6. However, it is asserted that these limitations are obvious over the cited Lin patent in view of Hoyt.

Hoyt teaches acid-dye resistant polyamide fibers comprising a nylon polymer having amine end groups blocked with a chemical blocking agent (abstract). Suitable polyamides are nylon 6, nylon 6,6, nylon 6,12, and nylon 12 (col. 4, lines 26-29). By blocking the AEG's with a blocking agent the available acid dye sites are reduced, thereby making the fiber acid dye resistant (col. 6, lines 38-47). In other words, the nylon is resistant to being dyed by acid dyes in a dyebath and to being stained by acid dyes such as those found in food products. The nylon fibers treated with a blocking agent have titratable AEG concentrations of less than 25 meq/kg, while lightly colored nylons may have concentrations in the range of 2-20 meq/kg (col. 7, lines 3-17).

Thus, it would have been obvious to one skilled in the art to employ a nylon treated with a blocking agent as taught by Hoyt for the sheath component of the Lin invention. Motivation to do so would be to further enhance the Lin fiber's resistance to acid-dyes by blocking the amine end group acid dye sites. In modifying the sheath of the Lin fiber with the Hoyt nylon, the present limitations of the core polymer being susceptible to dyeing while the sheath polymer is resistant to dyeing is automatically met since the majority of the available dye sites of the sheath polymer, as measured by the AEG concentration, are blocked.

The disclosures of Lin and Hoyt do not explicitly teach dyeing the nylon bicomponent fibers. However, as discussed above, Segraves teaches dyeing a sheath/core polymer wherein the dye penetrates into the core polymer but leaves the sheath essentially undyed. Thus, it would have been obvious to one skilled in the art to dye the fiber of Lin as modified by the Hoyt teachings in order to produce a nylon fiber which has color depth yet is resistant to staining. Other advantages of having a nondyed sheath/dyed core fiber include the fiber being colorfast to washing, UV, bleach, and abrasion since the dye is protected by the undyed sheath. Therefore, claims 1 and 3-9 are rejected as being obvious over the cited prior art.

10. Claim 2 is rejected under 35 USC 103(a) as being unpatentable over the cited Segrave patent and in view of the cited Anton patent or US 5,468,555 issued to Lijten.

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Claim 2 is rejected under 35 USC 103(a) as being unpatentable over the cited Lin, Hoyt, and Segraves patents and in further view of the cited Anton patent or US 5,468,555 issued to Lijten.

Claim 2 limits the filament to being a trilobal filament.

Neither Segrave nor Lin and Hoyt disclose trilobal filaments. However, it is well-known in the art to have trilobal cross-sectional shapes, even in bicomponent carpet filaments for the purposes of increasing bulk and improving soiling characteristics. For example, Lijten teaches trilobal filaments are desirable in carpet fibers (col. 3, lines 10-21). Additionally, as noted above, Anton teaches trilobal filaments. Hence, it would have been instantly obvious to one of ordinary skill in the art to practice the conceptual invention of Segrave or Lin and Hoyt with trilobal filaments, motivated by the expectation of providing a higher quality fiber due to increased yarn bulk and improved soiling characteristics. Therefore, claim 2 is rejected as being obvious over the cited prior art.

Conclusion

11. The art made of record and not relied upon is considered pertinent to applicant's disclosure.

12. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Cheryl Juska whose telephone number is 703-305-4472. The Examiner can normally be reached on Monday-Friday 10am-6pm.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Terrel Morris can be reached on 703-308-2414. The fax phone numbers for the

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organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



CHERYL A. JUSKA
PRIMARY EXAMINER

cj
August 11, 2003